IN THE CLAIMS

For the convenience of the Examiner all pending claims of the present Application are shown below whether an amendment has been made or not.

1.   (Amended)   A method of managing one or more optical elements, comprising:

storing in a memory, provisioning information describing at least a first ~~one~~ setting of an optical element;

storing in the memory, monitored information describing at least a first ~~one~~ operational characteristic of the optical element, at least a portion of the monitored information being correlated with at least a portion of the provisioning information; and

maintaining in the memory, a correlation history comprising a plurality of entries each correlating a value of the first setting to a value of the first operational characteristic, at least two of the entries reflecting correlated values of the first setting and the first operational characteristic determined at different times. ~~the provisioning information stored over time and the monitored information correlated to that provisioning information.~~

2.   (Original) The method of Claim 1, wherein the memory comprises a memory local to the optical element.

3.   (Original) The method of Claim 1, wherein the memory comprises a central memory operable to store information relating to a plurality of optical elements.

4.   (Original) The method of Claim 3, wherein the plurality of optical elements reside in a single optical link.

5.   (Original) The method of Claim 3, wherein the plurality of optical elements comprises:

a first plurality of optical elements residing in a first optical link; and

a second plurality of optical elements residing in a second optical link.

6.   **(Original)**   The method of Claim 1, wherein the provisioning information comprises an optical element setting selected from a group consisting of an amplifier gain, a laser drive current, a pre-emphasis level, and a number of channels amplified.

7.   **(Original)**   The method of Claim 1, wherein the monitored information comprises information selected from a group consisting of a total received power, a total transmitted power, a per channel received power, a per channel transmitted power, a mid-stage power of a multi-stage amplifier, a pump laser setting, a pump laser output power, a pump laser drive current, a thermal electrical cooler setting, and a thermal electrical cooler drive current, an amplifier output power, a gain tilt, an optical signal-to-noise ratio, and a back reflected power.

8.   **(Original)**   The method of Claim 1, further comprising querying the optical element for provisioning information describing at least one element setting.

9.   **(Original)**   The method of Claim 1, further comprising:

accessing the memory to retrieve correlated provisioning and monitored information; and

applying at least a portion of the retrieved information to an application operable to monitor and/or modify the performance of the element based at least in part on the retrieved information.

10.   **(Original)**   The method of Claim 9, wherein the application is operable to display the retrieved correlated provisioning and monitored information.

11.   **(Original)**   The method of Claim 9, wherein the application is operable to identify a trend in the operation of the element.

12.   **(Original)**   The method of Claim 9, wherein the application facilitates comparison of correlated provisioning and monitored information associated with a first time period with correlated provisioning and monitored information associated with a second time period.

13.   (Original) The method of Claim 1, further comprising:

accessing the memory to retrieve provisioning information correlated with monitored information reflecting a desired operational characteristic of the element;

applying at least a portion of the retrieved provisioning information to the element to result in the element operating more closely to the desired operational characteristic.

14.   (Original) The method of Claim 1, further comprising:

accessing the memory to retrieve provisioning information correlated with monitored information reflecting a desired operational characteristic of the element;

comparing the retrieved provisioning information to current provisioning information to determine a difference in provisioning information.

15.   (Original) The method of Claim 14, further comprising applying at least a portion of the retrieved provisioning information to the element to result in the element operating more closely to the desired operational characteristic.

16.   (Original) The method of Claim 1, wherein the optical element comprises an optical amplifier.

17.   (Original) The method of Claim 1, wherein the optical element comprises an input terminal comprising at least one optical transmitter.

18.   (Original) The method of Claim 1, wherein the optical element comprises an output terminal comprising at least one optical receiver.

19.   (Original) The method of Claim 1, wherein the optical element comprises an add/drop multiplexer.

20.   (Amended)   A method of managing a plurality of optical elements, comprising:

storing in a memory, provisioning information describing at least a first ~~one~~ setting of each of a plurality of optical elements in an optical link;

storing in the memory, monitored information describing at least a first ~~one~~ operational characteristic of each of the plurality of optical elements, at least a portion of the monitored information being correlated with at least a portion of the provisioning information associated with that optical element; and

maintaining in the memory, a link history comprising a plurality of entries each correlating a value of the first setting to a value of the first operational characteristic for each of the plurality of optical elements, at least two of the entries reflecting correlated values of the first setting and the first operational characteristic for each of the plurality of optical elements determined at different times. ~~the provisioning information for each of the plurality of optical elements stored over time and the monitored information correlated to that provisioning information.~~

21.   (Original)   The method of Claim 20, further comprising:

accessing the memory to retrieve correlated provisioning and monitored information; and

applying at least a portion of the retrieved information to an application operable to monitor and/or modify the performance of at least one of the plurality of optical elements based at least in part on the retrieved information.

22.   (Original)   The method of Claim 21, wherein the application is operable to display the retrieved correlated provisioning and monitored information for each of the plurality of optical elements in the optical link.

23.   (Original)   The method of Claim 21, wherein for at least one of the plurality of optical elements, the application facilitates comparison of correlated provisioning and monitored information associated with a first time period with correlated provisioning and monitored information associated with a second time period.

24.   **(Original)** The method of Claim 20, further comprising:

accessing the memory to retrieve provisioning information correlated with monitored information reflecting a desired operational characteristic of the link;

applying at least a portion of the retrieved provisioning information to at least one of the plurality of optical elements to result in the optical link operating more closely to the desired operational characteristic.

25.   **(Original)** The method of Claim 20, further comprising:

accessing the memory to retrieve provisioning information correlated with monitored information reflecting a desired operational characteristic of the optical link;

comparing the retrieved provisioning information to current provisioning information to determine a difference in provisioning information.

26.   **(Original)** The method of Claim 25, further comprising applying at least a portion of the retrieved provisioning information to at least one of the plurality of optical elements to result in the optical link operating more closely to the desired operational characteristic.

27.   **(Original)** The method of Claim 20, further comprising:

accessing the memory to retrieve provisioning and/or monitored information associated with at least some of the plurality of optical elements;

comparing the retrieved information associated with the at least some of the plurality of optical elements to identify a problem in the optical link.

28.   **(Amended)**   A method of managing one or more optical elements, comprising:

accessing a memory comprising:

monitored information <u>comprising a plurality of values each</u> describing at least <u>a first</u> ~~one~~ operational characteristic of an optical element measured at <u>one of</u> a plurality of <u>different times</u> ~~time~~; and

~~provisioning information correlated with at least some of the monitored information, the~~ provisioning information describing at least <u>a first</u> ~~one~~ setting of the optical element, <u>the provisioning information correlated with at least some of the monitored information</u>; and

retrieving <u>the</u> provisioning information <u>and the</u> correlated ~~with~~ monitored information ~~reflecting a desired operational characteristic of the optical element; and~~

applying at least a portion of the retrieved provisioning information to the optical element to result in the optical element operating more closely to the desired operational characteristic.

29.   **(Original)**   The method of Claim 28, wherein retrieving the provisioning information comprises:

identifying monitored information associated with the desired operational characteristic; and

identifying the provisioning information correlated to the identified monitored information.

30.   **(Original)**   The method of Claim 28, wherein retrieving the provisioning information comprises identifying provisioning information associated with a desired optical element setting.

31. **(Amended)** A method of managing one or more optical elements, comprising:

accessing a memory comprising:

monitored information <u>comprising a plurality of values each</u> describing at least <u>a first</u> ~~one~~ operational characteristic of an optical element measured at <u>one of</u> a plurality of <u>different times</u> ~~time periods~~; and

~~provisioning information correlated with at least some of the monitored information, the~~ provisioning information describing at least <u>a first</u> ~~one~~ setting of the optical element, <u>the provisioning information correlated with at least some of the monitored information; and</u>

retrieving <u>the</u> provisioning information <u>and the</u> correlated ~~with~~ monitored information ~~reflecting a desired operational characteristic of the optical element; and~~

applying at least a portion of the retrieved information to an application operable to monitor and/or modify the performance of the optical element based at least in part on the retrieved information.

32. **(Original)** The method of Claim 31, wherein the application is operable to display the retrieved correlated provisioning and monitored information.

33. **(Original)** The method of Claim 31, wherein the application is operable to identify a trend in the operation of the optical element.

34. **(Original)** The method of Claim 31, wherein the application facilitates comparison of correlated provisioning and monitored information associated with a first time period with correlated provisioning and monitored information associated with a second time period.

35.   **(Amended)**   A system operable to facilitate management of one or more optical elements, the system comprising:

an element agent operable to receive provisioning information describing at least <u>a first</u> ~~one~~ setting of an optical element and monitoring information describing at least <u>a first</u> ~~one~~ operational characteristic of the optical element, wherein at least a portion of the provisioning information is correlated with at least a portion of the monitored information; and

an element memory accessible to the element agent and operable to maintain a correlation history for the optical element, the correlation history comprising <u>a plurality of entries each correlating a value of the first setting to a value of the first operational characteristic, at least two of the entries reflecting correlated values of the first setting and the first operational characteristic determined at different times.</u> ~~a plurality of correlated provisioning and monitored information items.~~

36.   **(Original)**   The system of Claim 35, wherein the optical element agent comprises a querying module operable to query the optical element on demand, on a period basis, or on a random basis to retrieve provisioning or monitored information.

37.   **(Original)**   The system of Claim 35, wherein the memory comprises a memory local to the optical element.

38.   **(Original)**   The system of Claim 35, wherein the memory comprises a central memory operable to store information relating to a plurality of optical elements.

39.   **(Original)**   The system of Claim 35, wherein the plurality of optical elements reside in a single optical link.

40.   **(Original)**   The system of Claim 35, wherein the plurality of optical elements comprise:

a first plurality of optical elements residing in a first optical link; and

a second plurality of optical elements residing in a second optical link.

41.   **(Original)** The system of Claim 35, wherein the provisioning information comprises an element setting selected from a group consisting of an amplifier gain, a laser drive current, a pre-emphasis level, and a number of channels amplified.

42.   **(Original)** The system of Claim 35, wherein the monitored information comprises information selected from a group consisting of a total received power, a total transmitted power, a per channel received power, a per channel transmitted power, a mid-stage power of a multi-stage amplifier, a pump laser setting, a pump laser output power, a pump laser drive current, a thermal electrical cooler setting, and a thermal electrical cooler drive current, an amplifier output power, a gain tilt, an optical signal-to-noise ratio, and a back reflected power.

43.   **(Original)** The system of Claim 35, further comprising an application operable to access the correlation history and to monitor and/or modify the performance of the optical element based at least in part on information from the correlation history.

44.   **(Original)** The system of Claim 43, wherein the application comprises a display module operable to display the retrieved correlated provisioning and monitored information.

45.   **(Original)** The system of Claim 43, wherein the application comprises a trouble-shooting application operable to identify a problem with a current set of provisioning information by comparing the current set of provisioning information to provisioning information retrieved from the correlation history.

46.   **(Original)** The system of Claim 43, wherein the application comprises a reversion provisioning module operable to identify from the correlation history a set of provisioning information previously associated with the optical element and to apply at least a portion of the identified provisioning information to the optical element.

47.   **(Original)**   The system of Claim 43, wherein the application comprises a benchmarking module operable to:

apply a first set of provisioning information to the optical element to obtain a first set of monitored information correlated to the first set of provisioning information; and

apply a second set of provisioning information to the optical element to obtain a second set of monitored information correlated to the second set of provisioning information; and

compare the correlated first set of monitored and provisioning information with the second set of monitored and provisioning information.

48.   (Amended) A system operable to facilitate management of a plurality of optical elements, the system comprising:

a manager agent operable to receive, for each of a plurality of optical elements, provisioning information describing at least a first ~~one~~ setting of the optical element and monitoring information describing at least a first ~~one~~ operational characteristic of the optical element, wherein at least a portion of the provisioning information is correlated with at least a portion of the monitored information; and

a manager memory accessible to the manager agent and operable to maintain a link ~~correlation~~ history for the plurality of optical elements, the link ~~correlation~~ history comprising a plurality of entries each correlating a value of the first setting to a value of the first operational characteristic for each of the plurality of optical elements, at least two of the entries reflecting correlated values of the first setting and the first operational characteristic for each of the plurality of optical elements determined at different times. ~~a plurality of correlated provisioning and monitored information measurements for each of the plurality of optical elements.~~

49.   (Original) The system of Claim 48, wherein the manager agent comprises a querying module operable to query at least one of the plurality of optical elements on demand, on a period basis, or on a random basis to retrieve provisioning or monitored information.

50.   (Original) The system of Claim 48, further comprising:

a plurality of element agents, each communicating with one of the plurality of optical elements, each element agent operable to receive provisioning and monitored information from its associated optical element, and each operable to generate an element correlation history associated with that optical element;

wherein the manager agent is operable to generate the link correlation history based on the element correlation history associated with each of the plurality of optical elements.

51.   (Original) The system of Claim 48, wherein the plurality of optical elements reside in a single optical link.

52.   **(Original)** The system of Claim 48, wherein the plurality of optical elements comprise:

a first plurality of optical elements residing in a first optical link; and

a second plurality of optical elements residing in a second optical link.

53.   **(Original)** The system of Claim 48, further comprising an application operable to access the link correlation history and to monitor and/or modify the performance of an optical link comprising the plurality of optical elements based at least in part on information from the link correlation history.

54.   **(Original)** The system of Claim 53, wherein the application comprises a trouble-shooting application operable to identify a problem with a current set of provisioning information by comparing the current set of provisioning information to provisioning information retrieved from the link correlation history.

55.   **(Original)** The system of Claim 53, wherein the application comprises a reversion provisioning module operable to identify from the link correlation history a set of provisioning information previously associated with at least one of the plurality of optical elements and to apply at least a portion of the identified provisioning information to the at least one optical element.

56.   **(Original)** The system of Claim 53, wherein the application comprises a benchmarking module operable to:

apply a first set of provisioning information to the link to obtain a first set of monitored information correlated to the first set of provisioning information; and

apply a second set of provisioning information to the link to obtain a second set of monitored information correlated to the second set of provisioning information; and

compare the correlated first set of monitored and provisioning information with the second set of monitored and provisioning information.

Claims 57-64 (Withdrawn)